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TALENT

Technical Publication

USE OF THE

ALTITUDE-CORRECTION GRAPH

PIC/TP-4/60

AUGUST 1960

WARNING: HANDLE VIA TALENT CONTROL CHANNELS ONLY

CENTRAL INTELLIGENCE AGENCY

PHOTOGRAPHIC INTELLIGENCE CENTER

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USE OF THE ALTITUDE-CORRECTION GRAPH

GENERAL

The purpose of this Technical Publication is to provide instructions for using the Altitude-Correction Graphs (ACGs) which are prepared for selected TALENT missions. Information derived from the ACGs can be used to determine the best available value for the altitude above sea level (ASL) of the camera station along the line of flight. This ASL can then be used to determine the scale of vertical photography, and also to compute rectification data for oblique photographs.

THE ACG FORMAT

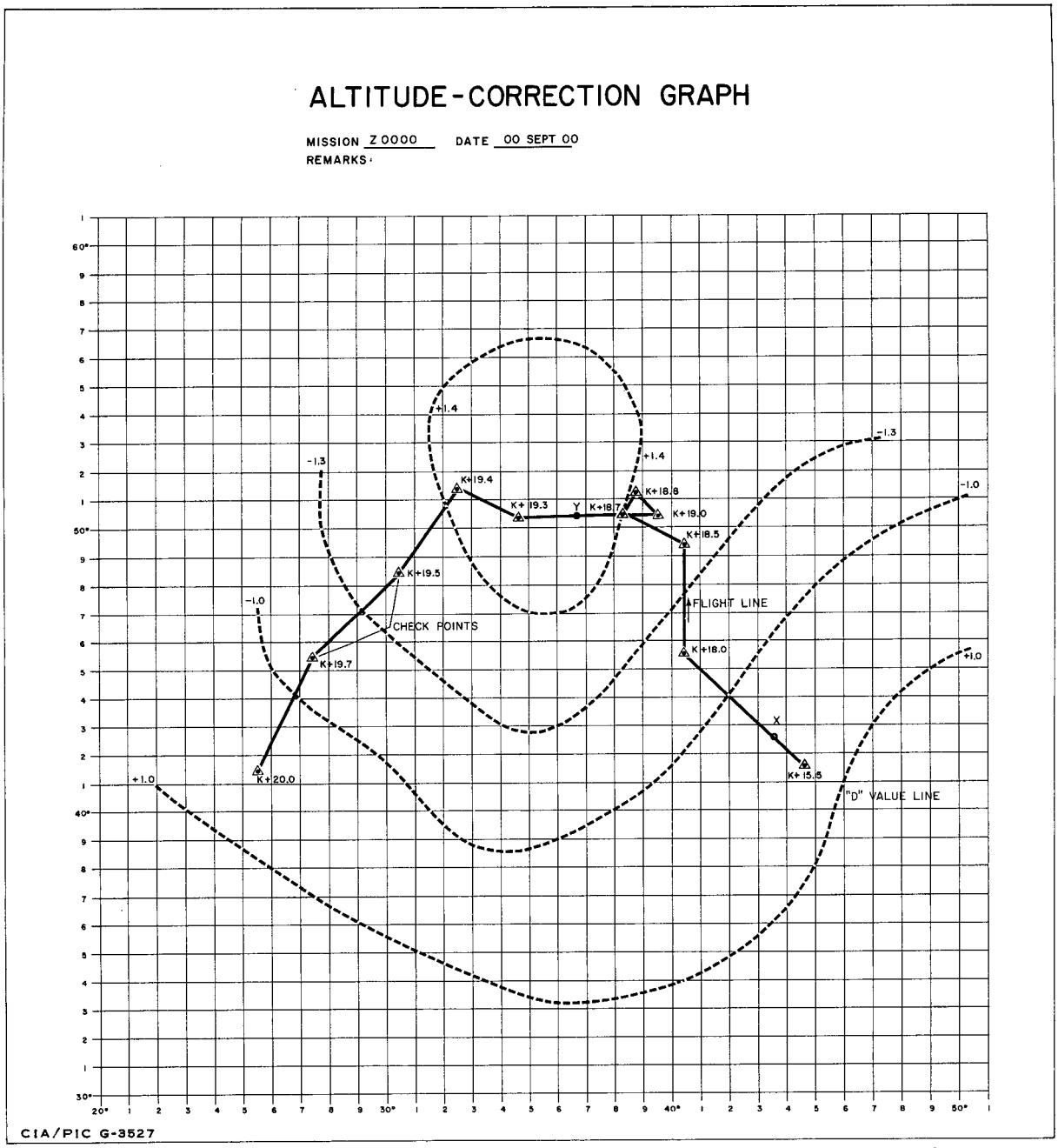
The format of the ACG is a representative rectangular grid on which each 0.6 inch square is equal to one degree of latitude or longitude (see accompanying Sample ACG). The flight line is shown on the ACG as a solid line connecting a series of check points, which are plotted as triangles. Recorded insrument ASL's are given at each check point. The "D" values, or atmospheric correction values, are shown on the ACG as dashed lines, each of which has a constant plus or minus value.

USING THE ACG

To obtain the best available altitude value by using the ACG, the following procedure is recommended:

1. Determine the geographical ground location of the photograph on a suitable map of the area. Find this location along the flight line of the ACG.

2. Determine the recorded instrument ASL at this location, interpolating if the photograph falls between check points on the flight line.



SAMPLE ALTITUDE-CORRECTION GRAPH (ACG). An actual ACG is approximately four times this size (26 by 24 inches). Notations in red are for explanatory purposes only, and do not appear on an actual ACG.

3. Determine the "D" value, or atmospheric correction. Should the photograph location fall between two of the dashed lines, the "D" value must be interpolated. This value is added to or subtracted from the instrument ASL, obtained in Step 2, to obtain the corrected ASL.

4. Determine the ground elevation at the point of interest on the photograph from topographic maps or other sources of information. Subtract this value from the corrected ASL obtained in Step 3. The result is the best available altitude determination that can be made of the camera station above the point of interest, which can then be used to determine scale.

EXAMPLES

A. An analyst wishes to compute the scale of a point of interest on a vertical photograph by using the ACG. The following steps would be taken:

1. Determine the geographical location of the photograph on a suitable map of the area. Find this location along the flight line of the ACG (see Point X on Sample ACG). This is determined to be 42°30'N-43°30'E;

2. Determine the instrument ASL at Point X by interpolating between check points K+15.5 and K+18.0. The resultant instrument ASL is approximately K+16.1;

3. Determine the atmospheric correction by interpolating between "D" value lines, +1.0 and -1.0. The resultant atmospheric correction is approximately -0.3. Subtracting -0.3 from K+16.1 gives a corrected ASL of K+15.8;

4. Determine the ground elevation at the point of interest on the photograph from topographic maps or other sources of information. Subtract this elevation from the corrected ASL. The result is the altitude

above the point of interest, which can be used to determine the scale of that point on the photograph.

B. An analyst wishes to compute the scale of a point of interest on a vertical photograph by using the ACG. The following steps would be taken:

1. Determine the geographical location of the photograph on a suitable map of the area. Find this location along the flight line of the ACG (see Point Y on Sample ACG). This is determined to be 50°20'N-36°40'E;

2. Determine the instrument ASL at Point Y by interpolating between check points K+19.0 and K+19.3. The resultant instrument ASL is approximately K+19.2;

3. Determine the atmospheric correction. In this instance, Point Y falls within the +1.4 "D" value line. Add +1.4 to the instrument ASL of K+19.2 to obtain an actual ASL of K+20.6;

4. Determine the ground elevation of the point of interest on the photograph from topographic maps or other sources of information. Subtract this elevation from the corrected ASL. The result is the altitude above the point of interest, which can be used to determine the scale of the photograph.

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